In re Patent Application of:
SMITH
Serial No. **09/441,709**
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In the Claims:

Claims 1-32 (Previously Cancelled).

33. (Previously Added) A method for processing a video data stream in an electronic imaging system, said video data stream comprising a series of pixel values corresponding to pixel sites in the electronic imaging system, the method comprising the step of:

filtering the video data stream in real time for correcting/modifying defective pixel values.

34. (Previously Added) A method according to Claim 33, wherein the step of filtering comprises filtering each pixel value based on a plurality of adjacent pixel values.

35. (Previously Added) A method according to Claim 34, wherein the step of filtering comprises filtering each pixel value using a current pixel value as part of a data set including the plurality of adjacent pixel values for determining whether to correct/modify the current pixel value and how to correct/modify the current pixel value.

36. (Currently Amended) A method according to Claim 33, wherein the electronic imaging system comprises a memory; the method further comprising the steps of:

filtering pixel values not stored in the memory using a first filtering algorithm;

identifying defective pixel values;

storing locations of the defective pixel values in the memory; and

~~filtering pixel values not stored in the memory using a first filtering algorithm; and~~

filtering the defective pixel values stored in the memory using a second filtering algorithm.

37. (Previously Added) A method according to Claim 36, wherein the filtering of each pixel value is based on a plurality of adjacent pixel values; the first filtering algorithm using a current pixel value as part of a data set including the plurality of adjacent pixel values.

38. (Previously Added) A method according to Claim 37, wherein the first filtering algorithm implements the steps of:

sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon a predetermined criteria; and

modifying the current pixel value with respect to its rank in the rank order.

39. (Previously Added) A method according to Claim 38, wherein the current pixel value is modified if its rank is greater than a predetermined maximum rank value or less than a predetermined minimum rank value.

40. (Previously Added) A method according to Claim 39, further comprising:

replacing the current pixel value by a pixel value having the predetermined maximum rank value if the rank of the

current pixel value is greater than the predetermined maximum rank value;

replacing the current pixel value by a pixel value having the predetermined minimum rank value if the rank of the current pixel value is less than the predetermined minimum rank value; and

leaving the current pixel value unchanged if the current pixel value has a rank less than the predetermined maximum rank value and greater than the predetermined minimum rank value.

41. (Previously Added) A method according to Claim 40, wherein the predetermined maximum rank value is a highest ranking of the plurality of adjacent pixel values, and the predetermined minimum rank value is a lowest ranking of the plurality of adjacent pixel values.

42. (Previously Added) A method according to Claim 36, wherein the step of storing locations of the defective pixel values is based upon an output of the first filtering algorithm.

43. (Currently Amended) A method according to Claim 42, wherein ~~the step of storing comprises storing the location of each defective~~ a pixel value is determined to be defective based on a magnitude of a difference between ~~the~~ a current pixel value and ~~the~~ a pixel value corresponding to the output of the first filtering algorithm.

44. (Previously Added) A method according to Claim 43, wherein location of at least one pixel value having a greatest difference in magnitude from the output of the first filtering algorithm is stored in the memory for each frame of video data.

45. (Previously Added) A method according to Claim 36, wherein the filtering of each pixel value is based on the plurality of adjacent pixel values; and the second filtering algorithm excludes a current pixel value from a data set including the plurality of adjacent pixel values.

46. (Previously Added) A method according to Claim 45, wherein the second filtering algorithm replaces the current pixel value with a median value of the plurality of adjacent pixel values.

47. (Previously Added) A method according to Claim 36, wherein the step of storing comprises storing a defect value corresponding to a magnitude of the defect exhibited by each defective pixel value.

48. (Previously Added) A method according to Claim 47, further comprising updating contents of the memory using a predetermined memory management algorithm.

49. (Previously Added) A method according to Claim 48, further comprising the step of updating the defect value of each defective pixel value based upon an auto-regression function applied to a current pixel value of each defective

pixel location stored in the memory, a current output from the second filtering algorithm and a current stored defect value.

50. (Previously Added) A method according to Claim 36, wherein the first and second filtering algorithms are applied to the video data stream in parallel, and a final output pixel value is selected from outputs of the first and second filtering algorithms depending on whether a corresponding pixel location is stored in the memory.

Claims 51-64 (Cancelled).

65. (New) A method for processing a video data stream in an electronic imaging system comprising a memory, said video data stream comprising a series of pixel values corresponding to pixel sites in the electronic imaging system, the method comprising:

filtering the video data steam in real time for correcting/modifying defective pixel values, the filtering comprising

filtering pixel values not stored in the memory using a first filtering algorithm,

identifying defective pixel values,

storing locations of the defective pixel values in the memory, and

filtering the defective pixel values stored in the memory using a second filtering algorithm.

66. (New) A method according to Claim 65, wherein the filtering comprises filtering each pixel value based on a

plurality of adjacent pixel values.

67. (New) A method according to Claim 66, wherein the filtering comprises filtering each pixel value using a current pixel value as part of a data set including the plurality of adjacent pixel values for determining whether to correct/modify the current pixel value and how to correct/modify the current pixel value.

68. (New) A method according to Claim 65, wherein the filtering of each pixel value is based on a plurality of adjacent pixel values; the first filtering algorithm using a current pixel value as part of a data set including the plurality of adjacent pixel values.

69. (New) A method according to Claim 68, wherein the first filtering algorithm implements the following:

sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon predetermined criteria; and

modifying the current pixel value with respect to its rank in the rank order.

70. (New) A method according to Claim 69, wherein the current pixel value is modified if its rank is greater than a predetermined maximum rank value or less than a predetermined minimum rank value.

71. (New) A method according to Claim 70, further comprising:

replacing the current pixel value by a pixel value having the predetermined maximum rank value if the rank of the current pixel value is greater than the predetermined maximum rank value;

replacing the current pixel value by a pixel value having the predetermined minimum rank value if the rank of the current pixel value is less than the predetermined minimum rank value; and

leaving the current pixel value unchanged if the current pixel value has a rank less than the predetermined maximum rank value and greater than the predetermined minimum rank value.

72. (New) A method according to Claim 71, wherein the predetermined maximum rank value is a highest ranking of the plurality of adjacent pixel values, and the predetermined minimum rank value is a lowest ranking of the plurality of adjacent pixel values.

73. (New) A method according to Claim 65, wherein storing locations of the defective pixel values is based upon an output of the first filtering algorithm.

74. (New) A method according to Claim 73, wherein a pixel value is determined to be defective based on a magnitude of a difference between a current pixel value and a pixel value corresponding to the output of the first filtering algorithm.

75. (New) A method according to Claim 74, wherein

location of at least one pixel value having a greatest difference in magnitude from the output of the first filtering algorithm is stored in the memory for each frame of video data.

76. (New) A method according to Claim 65, wherein the filtering of each pixel value is based on the plurality of adjacent pixel values; and the second filtering algorithm excludes a current pixel value from a data set including the plurality of adjacent pixel values.

77. (New) A method according to Claim 76, wherein the second filtering algorithm replaces the current pixel value with a median value of the plurality of adjacent pixel values.

78. (New) A method according to Claim 65, wherein the storing comprises storing a defect value corresponding to a magnitude of the defect exhibited by each defective pixel value.

79. (New) A method according to Claim 78, further comprising updating contents of the memory using a predetermined memory management algorithm.

80. (New) A method according to Claim 79, further comprising updating the defect value of each defective pixel value based upon an auto-regression function applied to a current pixel value of each defective pixel location stored in the memory, a current output from the second filtering

algorithm and a current stored defect value.

81. (New) A method according to Claim 65, wherein the first and second filtering algorithms are applied to the video data steam in parallel, and a final output pixel value is selected from outputs of the first and second filtering algorithms depending on whether a corresponding pixel location is stored in the memory.

82. (New) An apparatus for processing a video data stream comprising:

an electronic imaging device;

a first filter circuit connected to said electronic imaging device for filtering the video data stream in real time for correcting/modifying defective pixel values, the video data stream comprising a series of pixel values corresponding to pixel sites in said electronic imaging device;

a sampling circuit connected to said first filter circuit for sampling the video data stream to obtain a data set comprising a current pixel value and a plurality of adjacent pixel values;

a ranking circuit connected to said sampling circuit for sorting the plurality of adjacent pixel values into a rank order based upon predetermined criteria;

a comparator connected to said ranking circuit for comparing a current pixel value with the plurality of adjacent pixel values of selected ranks, and for generating a first filter output based upon the comparison; and

a median circuit connected to said ranking circuit

for determining a median value of the plurality of adjacent pixel values and for generating a second filter output equal to the median value.

83. (New) An apparatus according to Claim 82, further comprising a memory connected to said comparator for storing pixel locations selected based upon the first filter output.

84. (New) An apparatus according to Claim 83, further comprising an output circuit connected to said median circuit, said ranking circuit and said memory for generating a final output pixel value selected from the first and second filter outputs based upon contents of said memory.